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☞See Advertisement on last page.

Poetry.

OH! IS THERE NO SUNNY ISLE?

Oh! is there no sunny isle,
In seas so bright and fair,
Where the storm comes not and the green shore smiles,
Undash'd by waves of care?
No summit so near the skies,
Where weary feet may flee,
Where sorrow's dark deluge can never rise?
Oh no! it cannot be!

Yet an Ark is on the tide,
For anxious bosoms given;
And the flood that whelms each refuge beside
But lifts it nearer heaven.
It waits, of an Eden rare
The eternal hills to see;
But may it be wrecked ere it enter there?
Ah, no, it cannot be!

The hues of the faithful brow
Shall fade unmourned away;
For the tints in that pure sky shall glow
More bright and warm than they.
From that shore no tear shall fall
Into the crystal sea,
Not even the holiest tear of all—
Ah no! it cannot be!

THE LIGHTNING HORSE.

The iron-horse goes dashing by,—
The turf-steed, panting, lags behind:
While the railroad cities onward fly,
As swift, aye, swifter than the wind!

But steam's too slow:—it will not do;
The cry is, on! more speed? more power!
On!—rack the brain for something new,
A thousand miles, at least, an hour!

And yet too slow—a fleeter pace!
Bring down great heaven's thoroughfare?
T annihilate both time and space,
A thought and light past through the air?

'Tis done! he comes! the lightning horse!
Lo! thought and time fall far behind!!
The prize is thine, immortal Morse,
A triumph grand of mighty mind!

Magnetic King, o'er locomotion,
We hail thee monarch of the age,
While steam encircling land and ocean,
Is puffing, screaming loud with rage.

Curious Information.

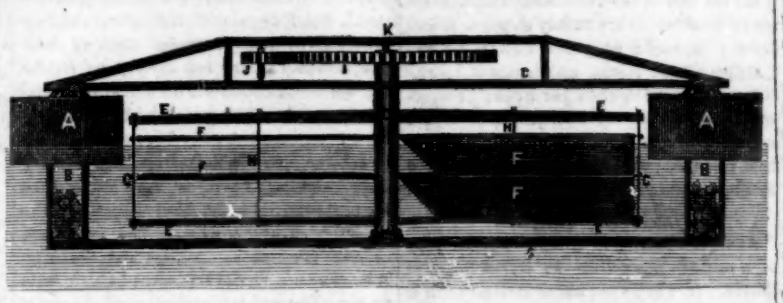
The mercantile shipping of the civilized world amounts to about eight million tons: and nets, clear of expenses, and insurance 10 per cent, $24,000,000 per annum. The appropriations in the British navy for the current year is $33,620,200.

The military Academy at West Point has received from the government more than $4,000,000.

The officers of the U. S. Navy receive a salary over $3,000,000 per annum. The ministers of the gospel receive an average of $500 each. Then the pay of our naval officers 1521 in number equals that received by more than 4000 ministers for all their labors of love.

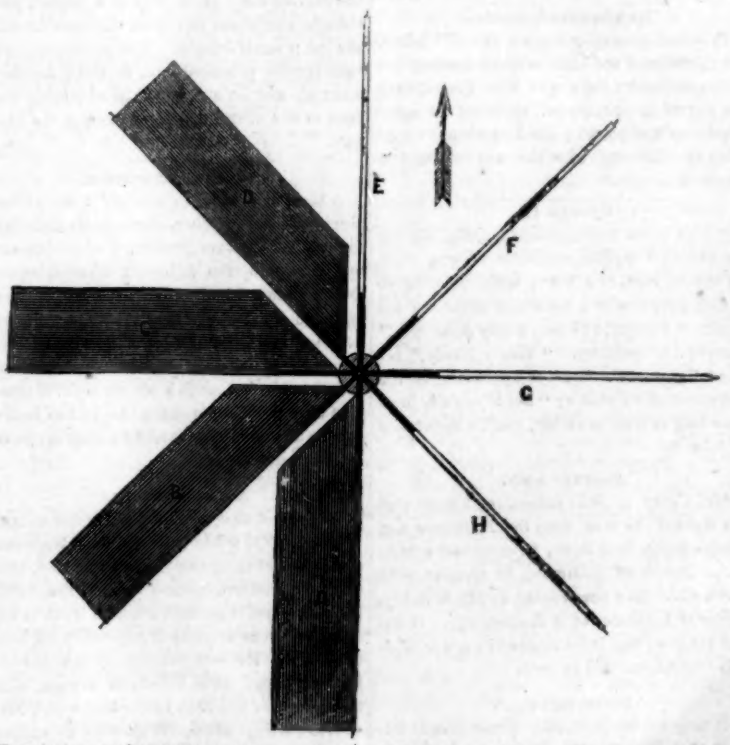
A man who had lived much in society, said that his *acquaintances* would fill a cathedral but that the pulpit would hold his *friends*.

SHERROD'S FAN WATER WHEEL.



DESCRIPTION.—Fig. 1 shows a transverse sectional view of a submerged water wheel, designed for tide and river currents. A A, represents two floats designed to float every thing seen in the figure, together with a house, when it cannot be on shore. The vertical frames B B, are made fast to frames in the centres of the floats and are intended to hold ballast as they represent. The floats are held stiffly and permanently together, by means of several timbers uniting the ballast wells at the bottom, and the floats at their tops, as is shown by C C. D, is the shaft of the wheel held in a perpendicular position by C and K. E E E E, are the arms of the wheel. G G, are iron rods that hold the arms together,—they also receive the journals of the paddles and in fact, are the only support that F F F F, the paddles, have in opposition to gravity, as the iron rods that connect the paddles (as can be seen let into and bolted fast with the boards that make them) pass loosely through the shaft. That side of the shaft opposite the direction of the stream, acts as a central horizontal support to the paddles' whole length when the force of the stream is on. The iron rods H H, serve the same purpose, that of supports, between the shafts and the periphery. The paddles are strongly fastened together at obtuse angles with each other, differing from right angles precisely the thickness of the boards in them. This mode of uniting the paddles will secure a perfect horizontal position of those opposite the left eye of the reader, while those opposite the right in a vertical position, can be supported by lapping against the lower arms of the wheel, as well as against each other, forming a sheet of paddles from the bottom to the top of the wheel almost water tight. I, on the upper end of the shaft D, is a large wheel to give motion to the small wheel J, which can be done in a very powerful manner, by immersing the whole figure with its parts all complete in a running stream up to the floats, and fastening it fore and aft. It can easly be seen by the square and abrupt manner in which the course of a stream is interrupted by the vertical paddles that as it cannot get under, through, nor over them, that it must push the wheel around, as there is very little opposition made to its onward motion by the horizontal paddles, they presenting nothing but their thin edges to the stream. In the opinion of the inventor there is no amount of power wanted by sane men that could not be furnished by a wheel constructed upon the principles embodied in Fig. 1. But for a more correct idea of this wheel, we refer to

Figure 2.



Here it is seen that A B C and D, are in a horizontal position, that E F G and H are in a vertical position, the stream running in the direction of the arrow, and bearing with its force on H G and F, E cannot move without changing its position, in the doing of which it becomes vertical, and E horizontals, both evolutions performed in the same time and while the wheel moves through a space equal to the width of the paddles. This wheel will run at any depth under water wherever there is a current, on this account it is perfectly protected from frost, except the union or the shaft with the water, which can easily be boxed up so that no ice can freeze around it. In rivers the fixtures seen in fig. 1 are unnecessary, as the wheel can be fastened from shore, it not being necessary that it should rise and fall with the stream, as in tide streams, because it will run just as well under the water with little or no change in its velocity in case of a stream's rising.

Many improvements have undoubtedly been made in hydraulic machines during the past ten years, and every week brings some new application or combination before the public, exhibiting the ingenuity and the mechanical mind of our people. At one time we are surprised at the originality of Bishop's hydraulic engine, at another with Winder's pump, all giving evidence of the deep working mechanical mind of sound mechanics. This week we present the Water Wheel of Mr. W. Sherrod, of Providence, R. I., and as the principle is capable of being applied to wind mills as well as water wheels, it must claim a candid and careful consideration by all those interested in mechanical improvement.

Application will be made for letters patent for the foregoing described wheel.

RAIL ROAD NEWS.

St. Lawrence and Atlantic Railroad.

A special meeting of this company was held in Montreal on the 20th ult., and it was resolved that interest at the rate of six per cent be allowed on all the shares of the stock, the interest to be paid on the 1st of Jan. 1848.—Three divisions of this road are in progress in the State of Maine, in length about 50 miles.

Providence and Worcester Railroad.

Twenty miles of this road are completed, and the cars have made successful trips already upon it. It is said to be a good road both in its construction and arrangements.

Foreign Railways.

By one of our foreign exchanges we learn that the Lanark branch of the Caledonian Railway will be opened about the 1st of March, 1848, and the Edinburgh branch was to have been ready on the 1st of this month. The character of the "navies" (laborers) on these works has undergone a complete reformation; many have been taught to read and write and a great number of them are located in mud and turf huts, with glass windows and well ventillated, built in squares or terraces, for which they pay a small weekly rent. Crime and drunkenness have greatly diminished.

Ceylon Railway.

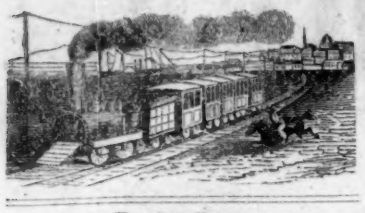
A general meeting of the shareholders of this company was held in London on the 17th of August. The report stated that the governments both at home and at Ceylon, fully appreciated the importance of the undertaking, and that they evinced a strong disposition to assist in its promotion; the cost would be about £850,000 from Colombo to Kandy, and the government would give a free grant of the land, on a lease of 79 years.

French Railways.

There is apparently much trouble in France owing to the way in which the government survey railways. The representatives of the Paris and Lyons railway have been placed in an unfavorable position by the errors committed by the Government engineers in their estimates for that road, they involving the company in some 8,000,000 francs more expense than is thought necessary to complete the undertaking. The penalty to be paid in case the work is not eventually proceeded in is placed in the bill before the Government committee at the enormous sum of 24,000,000 francs, a sufficient reason we should think for trouble.

Telegraph Line.

There are already 2350 miles of telegraph wires in operation in the United States—about 700 of which are in a continuous line from Philadelphia to Cincinnatti. In the course of a few months there will be 1000 more, chiefly to the south and south-west. There will then be one uninterrupted line of upwards of 3000 miles in length, of instantaneous communication between the Atlantic Ocean and the Gulf of Mexico.



Foreign News.

By the late news by the Hibernia, it appears that failures in England to the amount of $100,000,000 had already carried dismay to the hearts of all corn exporters in America. The failures have swept down some of the oldest corn dealing firms in Britain. We prophecied this last May, and told one of our greatest merchants what might be expected, but his mind was too warm in speculation to heed our advice.

Two of the largest literary institutions in London have been broken up and their extensive libraries, museums and collections of philosophical apparatus are to be sold by public auction. We are sorry to hear this.

A vessel had arrived in London with a cargo of bricks from the tower of Babel, and with other architectural curiosities for the British Museum.

The Pope has exhibited a determined spirit of the olden days. "There is a Brutus living yet," to defy Rome's enemies.

From Mexico.

Gen. Scott has taken part of the city and commands the whole of it from the heights of Chautulpec. The severe battle for these heights cost our army many a brave man. The Mexicans lost 4000 killed and wounded, the Americans 1700. Santa Anna was wounded but had retired slowly and occupied a strong position at Guadaloupe It was reported that the Mexicans under Paredes had retaken Puebla. No appearance of peace yet.

Fair of the American Institute.

The Fair opened at Castle Garden on the morning of Tuesday last, and we congratulate the Institute in regard to the excellent arrangements. We believe that this Fair surpasses all the previous ones, both in regard to the number, beauty and ingenuity of the articles displayed. It is well worth a journey from Oregon to see it. We admired as an article of great utility, No. 277, Cranston's Spring Mattrass, a cut of which we shall publish next week with a full description of its qualities.

Mechanic's Fair at Utica.

The third annual Fair of the Utica Mechanic's association will be held at their Hall, during the last week in December next Articles of American manufacture only, are to be exhibited. These fairs have so far surpassed every thing of the kind previously known, that they have been largely attended, and will no doubt be so on this occassion

The Cambridge Telescope.

The new Telescope at Cambridge is found to answer all the high anticipations which have been entertained with regard to it.—The wonderful nebula in the Constellation of Orion, has recently been subjected to the scrutiny of Mr. Bond through this Telescope, and it has fully yielded to the power of the admirable instrument. The capacity of the Telescope is thus shown to be equal if not superior to the famous instrument of Lord Rosse, which was represented with an engraving in Vol. 2 Scientific American, page 78, the great power of which this nebula so long resisted. May we not expect grand discoveries wish this new Telescope in the hands, as it is, of patient and skillful observers?

Woman's Influence.

The Legislature of Rhode Island have pledged a certain sum for the erection of a State Lunatic Asylum, on condition that $70,000 be raised by private subscriptions, Miss Dix, the philanthropist, has set about to raise the amount, and a few days ago procured the handsome donation of $40,000 from an old miser of Providence, who was never known to give a cent before for any public purpose.

Baron Rothschild drew the highest prize—$100,000—in a lottery last month, at Frankfort. Riches ever seek the rich.

Association of Geologists.

The Association of Geologists and Naturalists closed their sittings (at Boston) on Saturday last. On the last day of the session, a resolution was adopted, that a committee be appointed to represent to the Secretary of the Navy the importance of deep sea soundings, and suggest the adoption of such measures as to enable us to obtain as soon as possible, correct data with respect to the deeper depths of the sea.

Teeming Industry.

On the line of the Providence and Worcester railroad, there are twenty stopping places or way stations: 94 cotton mills; 307,006 spindles, 7,092 looms, making about 1,197,800 yards of cotton cloth per week; 22 woolen mills; 81 sets of woolen machinery; 4 scythe works, and 30 machine shops. The road is a fraction over 43 miles long, and will be in operation by the last of this month.

Amherst College.

Another donation of $12,000 has recently been made to this college by David Sears of Boston. It is to be put out at interest until it has accumulated to a certain sum, or been increased to a certain amount by donations from other sources, and is to be then appropriated for a Library Hall. Mr. Sears has also given the same sum to Harvard College on certain similar conditions. The same gentleman gave $10,000 to Amherst College several years since, but on such conditions that the college has not yet been able to draw on the fund.

Ginseng.

As this root commands a very high price in China, where it formerly (before American innovation) sold for its weight in gold, it can without doubt be made a very profitable article to American Commerce in our increasing intercourse with that mighty empire

The roots in their wild state, are usually small, but by cultivation they may be increased to three or four times the ordinary size. The plant will flourish in almost any ordinary soil, and exacts only the simplest culture.

Another Improvement Convention.

A convention was held, on the 1st inst., at Bloomfield, Mo., on the subject of reclaiming the extensive swamp lands of Missouri and Arkansas. A memorial to Congress for the purpose was adopted These lands lie in south-eastern Missouri and north-east ern Arkansas, and are considered capable of being made a productive and prosperous country.

McAdamized Roads.

It is not generally known that McAdam, the inventor of the kind of road bearing his name, realized a fortune in New York during the war of independence, by being an agent for the sale of prizes He had come to America in 1770; and after the war returned to England.

George IV.

"This is his most gracious majesty, George the Fourth," said an exhibitor of wax work for the million, at a penny each, pointing to a slim figure with a theatrical crown on his head. "I thought he was a very stout man," observed a spectator. "Werry likely," replied the man shortly, not approving of the comment of his visitor; "but if you'd 'a been here half as long as he has, you'd a been twice as thin.

Another Line.

Mr. Henry Rogers, Baltimore, has secured the right of the way from the Baltimore and Susquehanna Rail Road, to construct a telegraph line from Baltimore, to connect with the western line constructed by Mr. O'Reilly, either at Lancaster or at Harrisburgh. It has not yet been decided whether Morse's or House's instrument will be used.

Historical Fact.

It may not be unworthy of mention at this time that Banquo, the Thane of Lochaber, and who resided in the castle of Inverlechy, was the progenitoro f the Stuart family, of whom many of the crowned heads of Europe are descended. So that it is no wonder that our most gracious Queen should select Fort William, the capitol of Lochaber, for her landing place on her visit to this part of her ancient kingdom of Scotland.—*North British Mail.*

The Female Army of Switzerland.

We have mentioned in a previous number the two regiments of the women of the Canton of Uri, but we find in a French Paper a notice of them which we translate literally: "The two battallions, numbering fourteen hundred females in military dress, present an aspect at the same time formidable and captivating. In their evolutions and discipline they are drilled to perfection. Curiously enough, superiority of form and beauty has been very much the reason of difference of grade; the handsomest are of the advance guard, and this point of distinction and danger seems willingly conceded them by their companions who are less favored by Nature —Some classification has been guided by temperament also. The more vivid and flightly have been enrolled as voltigeurs, or lighthorse—the more phlegmatic as grenadiers. Those who have figures of more *embonpoint* are in the central body, those of slighter forms are stationed at the wings. The coarse and rude are enrolled as dragoons and *centinieres.* The creation of this corps (which, with its discipline and enthusiasm, seems likely, at the first throw of the coming political movements of Europe, to take possession of the Helvetian soil) is an exercise of the powerful genius of Salis Soglio, who has reserved to himself the general command.

Virginian Gold.

The people of Louisa County, in Virginia are becoming as excited upon the subject of gold mines as were their ancestors, the first settlers, the first band of whom it will be recollected, were nearly starved to death in consequence of having abandoned the culture of corn for the search of this precious metal. A lump of pure virgin gold valued at eighty dollars has been found upon a farm in Louis county, and arrangements are making by the proprietor for the prosecution of further researches and for the working of the mine on an extensive scale. Gold, Copper, and Iron Mines are said to abound in the same county, and all the inhabitants are preparing to enter the bowels of the earth.

Perseverance.

The Chinese tell of one of their countrymen who had been making strenuous efforts to acquire literary information, who discouraged by difficulties, at length gave up his books in despair. As he returned to manual employment, he saw a woman rubbing a crowbar on a stone, on asking her the reason, she replied she was in want of a needle, and thought she would rub down the crowbar till she got it small enough. The patience of the aged female provoked him to make another attempt, and he succeeded in obtaining the rank of one of the first three men in the empire.

Extraordinary Blast.

A blast was made on the 11th inst., at the Gneiss Quarry of Hon. Geo. Leiper, Ridley township, Delaware county, Pa., which cut out a block of the following dimensions:—Depth 13 feet 6 inches, with 56 feet at one end, and 24 at the other; length, exteriorly 146 feet, interiorly 110 feet. By a rough estimate the solid contents may be set down 75,000 cubic feet, with a weight of 5,770 tons. The bore was 13 feet deep, two inches in diameter at the bottom, and two kegs of powder were employed.

A Tough Story.

It is stated that a man in Illinois, named Wilson Corey, while cutting down a large oak a flash of lightning came down the tree, tore off all his clothes, made a hole in the earth five feet deep. and buried him in it up to his neck, so fast as to make it impossible for him to get out. He was rescued by his friends next morning. It is added, as strange, that four panthers had been in the tree which Mr. C. was cutting down, but gave no intimation of their presence, which was discovered only by their being found dead in the upper branches where they had been concealed, and were killed by the lightning.

At a meeting of the stockholders of the Cleveland and Cincinnati Railroad held some days since, $100,000 new subscriptions were reported, and ten miles of the road ordered to be put under contract.

Wealth of Harvard College.

The bequests made to this institution are enormous. In the annual report of the overseers of that institution, we notice no less than nineteen bequests which average more than $20,000 each. The available funds of the College given for specific purposes, the interest of which only is used, exceed *six hundred thousand dollars!* The Law Department has funds exceeding $40,000. And the Theological School more than $80,000! This opulence is the result of individual liberality of citizens in Massachusetts.

Rum and Crime.

Of 138 males in the Connecticut state Prison, 84 declare intemperance to be the cause of their present confinement and degradation, 13 have been engaged in the sale of intoxicating drinks and 4 in its manufacture.

A Sad Affair.

A short time since, at Sandlake, (N.Y.) a woman cut off the tongue of a boy, to whom she was step-mother. The reason she assigns for so doing, is to stop his telling lies.

As the ferry boat was crossing the river with passengers from Bathurst, Canada, a few days since, a fine salmon sprung out of the water into the lap of a lady. It struggled desperately to escape, but ultimately realized feellingly the amazing short distance there is between the frying pan and the fire.

A merchant examining a hogshead of hardware, on comparing it with the invoice, found it all right except a hammer less than the invoice. "Oh! don't be troubled my honey," said the Irish porter, "sure the nager took it out to open the hogshead with."

A dove which was kept in a cage at Pottsville, Pa., appearing desirous to escape, was set at liberty and flew away. After three weeks absence it returned, wounded by a shot and one leg broken, and clamored to be admitted to its cage again. This was done, and the bird cured, and it now remains contented and happy.

The 25th of November has been set apart by the Executives of Missouri and Massachusetts, as a day of general thanksgiving throughout those States.

A tobacconist of Rochester, prepared three thousand cigars for exhibition in the State Fair, the tobacco of which was entirely raised in Ondaga, and it is said to be of the best quality.

The Tribune says that a number of our countrymen have tendered their services to the Pope to raise companies in defence of his territories, threatened by the troops of Austria.

Mr. Gillet Stillman, proprietor of a gristmill and chair shop on Colebrook river, Conn., was caught in the machinery and carried through two iron cog wheels, and horribly mangled. He died immediately.

The Sault St. Marie Ship Canal is to be 4,500 feet in length and sixty feet in width, and when completed will make the entire chain of lakes navigable.

Great quantities of copper ore continue to arrive at Pittsburg from Lake Superior. Two masses weighing 3100 lbs. were lately melted with only a loss of two per cent.

A species of cotton worm has made its appearance in some of the Southern States and has done much damage to the cotton crop.

A new shaving soap has been invented, which takes off the beard by merely rubbing the soap on the chin. The only fault our informant says it possesses, is, that it takes off the skin too.

"I will give you my head if you are not wrong," exclaimed a dull and warm orator to the President Montesquieu in an argument. "I accept it," said the philosopher; "any trifle among friends has a value."

The Detroit Free Press has an account of 31 new flourishing mills in that State that will go into operation. Of these nine are in Macomb county.

Roger Sherman's Plough was exhibited at the late Mechanics Fair at Boston.

Jumping Locomotives.

It has frequently happened that Locomotives have been seen to jump and then run off the rail, and the cause of this has never been accurately accounted for. This circumstance hae occurred usually when the engine was descending a steep gradient. It is well known that the locomotive has an increasing velocity according to the laws which govern mechanics. Now in descending a steep grade the power of steam has been injudiciously superadded, and thus an artificial power is made to co-operate with the naturally accelerating velocity. The artificial power increases the velocity on the descent until the wheels (revolving levers) fixed to the crank axle outrun the piston. As soon as that occurs, the whole of the steam in the cylinders does not escape.—The quantity which remains at first is very small, and produces no perceptible effect, but soon accumulates and becomes an elastic medium resisting the piston near the end of the stroke, consequently virtually shortening the action of the piston and connecting rods, and thus checking the revolution of the wheels — The whole superincumbent weight continues its increasing velocity.

Now, it is evident, that if the wheels are checked while the heavy body resting on them pursues its rapid motion, that the two forces are not at that moment co-operating, producing a mometary check to the whole descending mass. As the resistance increases the check becomes greater, until at length the superincumbent weight pulls, through the medium of the wheels, the piston with such force against the steam which has not escaped from the cylinders, as to lift the wheels and give the "jumping" action. The bearing on the rail being lost, the whole engine readily deviates and runs off the rails. Them eans of preventing this species of accident appear to me to be two. First, to increase the size of the apertures by which the steam escapes from the cylinders. Secondly, to cut off all the steam as soon as the locomotive engine has commenced its descent, and not to give any steam until the engine has reached the level between the gradients.

Gradual rise of Newfoundland from the Sea.

It is a fact worthy of notice, that the whole of the land in and about the neighborhood of Conception Bay, very probably the whole island is rising out of the ocean at a very considerable rate which promises, at no very distant day, materially to affect, if not to render useless, many of the best harbors we have now on the coast. At Port de Grave a series of observations have been made, which undeniably prove the rapid displacement of the sea-level in the vicinity. Several large flat rocks over which schooners might pass some thirty or forty years ago with the greatest facility, are now approaching the surface, the water is scarcely navigable for a skiff. At a place called the Cosh, at the head of Bay Roberts, upwards of a mile from the sea-shore and at several feet above its level, covered with five or six feet of vegetable mould, there is a perfect beach, the stones being rounded, of a modern size, and in all respects similar to those now found in the adjacent land-washes.

English Chinese Collection.

This interesting assemblage of objects, which was formed by the late Mr. Nathan Dunn, at a vast expense, in order to exemplify the productions, manufactures, appearances, and other peculiarities of the celestial Empire, is about to be conveyed throughout the provinces of England for exhibition. In order to accomplish this novel undertaking, Mr. Langton and his coproprietors have had constructed 17 carriages, which when placed in juxtaposition, in the form of a parellelogram, constitute a noble and well-proportioned saloon, 175 feet in length 50 feet in breadth and 30 feet high, in which are arranged in compartments, as heretofore, all the objects constituting the Chinese Museum already referred to. A travelling band of musicians, clad *a la Chinoise*, will accompany this stupendous procession of carriages throughout its provincial progress.

Sponges are believed to consist of excitable flesh full of small mouths, by which they absorb and eject water.

Wonders of Science.

The late Dr. Chalmers in his work on Astronomy, remarks: "While the telescope enables us to see a system in every star, the microscope unfolds to us a world in every atom. The one shows us the insignificance of the world we inhabit; the other redeems it from that insignificance—presenting us a universe in the compass of a point, where the Almighty Ruler of all things finds room for the exercise of His attributes." Recent discoveries in Geology have brought to view a great multitude of facts, truly wonderful—especially respecting the state of animate creation many centuries past. While on the one hand it is found, by the remains of some ancient animals, that they were larger than any now living upon the earth, on the other hand, microscopic animals, almost inconceivably small, yet possessing mouths, stomachs, muscles, wings, glands, eyes, and other organs, are not only found in a fossil state, but forming rocks and soil for miles in extent. Chalk, and even flint, and some of the gems, are found, to a great extent, to be composed of animalcula.—A cubic inch of iron ochre is said to contain the remains of one billion of living, acting, reproducing beings. Prof. Hitchcock states that the silicious marl found under the peat swamps in New England, appears to be made up almost entirely of the skeletons of animals. It is also said, that a thousand millions of these animals would together, form a mass no larger than a grain of sand.

The Pope and the Sultan.

The late news from Europe contains a strange item, of the truth of which there appears to be no doubt. The French and Austrian Ambassadors have heretofore claimed to be the Protectors of the Catholics in the East, but their interference, in cases of great outrage was exceedingly trivial. They appeared to be satisfied with the honor and the political importance which the title of "Protector" conferred upon them. Pius IX has applied to the Sultan on the subject, and the consequence is that a Nuncio will be dispatched to Constantinople who will be the "Protector" of the Catholics scattered throughout the Turkish Empire. Some very vehement remonstrances have been made by the French Government, but the answers of the Pope's Secretary of State, have been of a most determined character accompanied with allusions far more honrable to the church than the state. —*Catholic Telegraph*

Amusing Blunder.

One of the subjects proposed by the English Fine Arts Commissioners for the decoration of the House of Lords is "Raleigh landing in Virginia." To this there appears to be a trifling objection. According to a correspondent of the London Times, Raleigh was never in Virginia, nor did he ever set foot in North America. In 1659 he sailed for Virginia, but was soon driven home by stress of weather, and the misconduct of his crew. Subsequently he fitted out five or six expeditions for that colony, and the energetic though unavailing efforts made by him to confirm a settlement there have doubtless so connected his name with Virginia as to lead to the popular blunder that he had himself visited its shores. These expeditions were commanded by Sir Humphrey Gilbert, Sir Richard Grenville, and other able navigators, but never by Raleigh in person.

Robert Burns.

This Scotch Poet was born in 1750.—Though a ploughman originally, he rose to high poetical fame. He has been called the greatest untaught genius since Shakspeare. His poems glow with the real fire of feeling and passion. As soon as he appeared in print he was noticed and drawn from the plough to associate with men of letters and opulence. But the change ruined him. He indulged in licentions pleasures, till his constitution gave way, and the tomb received him. He died at the age of 39.

Boston Caricature.

A *fat* fellow on horseback, enquiring whether he could pass *free* through the turnpikegate; who is answered by a gaping urchin, that "there is nothing like trying, as a load of hay passed through that morning without touching."

The Montour Iron Works.

These immense works, the most extensive in the country, are located at Danville, Penn. and are owned entirely by persons residing out of the states. The site owned by the Company immediately adjoins the range of hills from which the ore is mined, and in the vicinity is a large supply of limestone which is a necessary ingredient in fusing. The rolling mills, lands, machine shops and furnaces, cost nearly three quarters of a million of dollars. The capital of the company is $450,000 but large additions and improvements have been made from the receipts and other resources. There are about six hundred persons in the immediate employment of these works, and near 1800 are supported by them thus showing how many are incidentally affected by any act of unwise or injurious legislation They are capable of producing 17,000 tons of pig iron and 10,000 tons of railroad iron annually. The surplus of pig iron is sent to market; 12,500 tons being required to manufacture 10,000 tons for railroad purposes. Thirty puddling furnaces, four blast furnaces, rolling mill and machine shop, are in operation. The rolling mill establishment alone is 300 feet long and 160 feet wide. This is the *first mill* that made railroad iron in Pennsylvania. Some idea may be formed of the general extent of the business carried on, from the fact that 80,000 tons of coal are consumed a year. When a road is constructed from there to Pottsville, which will be done in the next two years, this company will possess facilities for operating, by drawing its coal from the valuable Mahoney vein and sending its iron in a single day to Philadelphia, which will greatly enhance its prosperity.

The process of combining the different parts of ore, limestone and coal, each of which is carefully weighed, and the proper blending of which requires much skill and care, in the large receptacle of the blast furnace, is full of instruction and pleasure. By a valuable improvement what was formerly the waste heat is now concentrated and forms the blast power of the furnace. This is the first stage in which the rough pig iron is seen in unseemly bars. These bars are then taken to the puddling furnaces, where the carbon and impure earthy matters are extracted and the cast metal is converted into wrought, by the application of an intense heat, and which reduces the material to a half-molten form In this state, it is introduced into a rotary pressing machine and afterwards shaped into bars. Then it undergoes a re heating, which removes other impurities that may have remained, and in this condition is placed under the tremendous power of the rolling mill, beginning with a huge, clumsy bar, formed of different smaller bars, cemented by heat and passing through the different sizes of the mill, each impressing the shape of the T rail, until the complete bar for the road is finally finished. Then there are machines to adjust the length of the rail, to prove its soundness and to straighten any curves that may exist. These are the principal features of the whole process, though there are others less important.

General Torrejon.

This Mexican officer appears to be supplied with an extra supply of lives, for he has been regularly killed in every one of the great battles. At Palo Alto he was slain by a grape shot, at Monterey, by a Texan rifle bullet, at Buena Vista, by a thrust from a bayonet, at Cerro Gordo his dead body was found on the field at the close of the fight; and now he has been killed again at Contreras. It is unlucky for him that his aptitude for getting himself killed is at par with his facility at coming to life again.

Leigh Hunt.

The British poet is the son of American parents, though born in England. His father was a royalist, and fled to the mother country at the time of the revolution. His mother was a sister of the celebratedpainter, Benjamin West.

California Emigrants.

Gov. Boggs, in his letter to Emigrants, says: "Those who are well fixed in Missouri, I would say, had better stay there—though most of the emigrants, I must acknowlede, are pleased with this country. Mechanics of all kinds would do well here."

Californian Houses.

Externally, the habitations have a cheerless aspect, in consequence of the paucity of windows, which are almost unattainable luxuries. Glass is rendered ruinously dear by the exorbitant duties, while parchment, surely a better substitute than a cubic yard of adobes, is clearly inadmissible in California, on account of the trouble of its preparation; and, to increase the expense, carpenters are equally extravagant and saucy, charging three dollars for such a day's work as one is likely to get from men who will not labor more than three days in the week. After all, perhaps the Californians do not feel the privation of light to be an inconvenience. While it makes the rooms cooler, it cannot, by any possibility, says Sir George Simpson, interfere with the occupations of those who do nothing; and even for the purpose of ventilation, windows are hardly needed, inasmuch as the bedding, the only thing that requires fresh air, is daily exposed to the sun and wind. Among the Californian housewives, the bed is quite a show, enjoying, as it does, the full benefit of contrast. While the other furniture consists of a deal table and some badly made chairs, with probably a Dutch clock and an old looking glass, the bed ostentatiously challenges admiration, with its snowy sheets frinded with lace, its piles of soft pillows covered with the finest linen or the richest satin, and its well arranged drapery of costly and tasteful curtains. Still, notwithstanding the washings and the airings, this bed is but a whited sepulchre, concealing in the interior a pestilential wool mattras, the impregnable stronghold of millions of *las pulgas*.

Burn's and Shakspeare's Houses.

The house in which Shakspeare, the great poet of England was born, is now in the market. It is rather a curious coincidence that the house in which Burns the great poet of Scotland lived for many years, and in which he died, is in the market at the same time.

What is Riches.

An Arabian in the desert had ate nothing for three days, and was on the point of death. He at last found a small leathern sack in the sand, he seized it, felt it, and exclaimed, "Allah be praised! these must either be dates or nuts." He opened the sack hastily, looked in, and sighed, "Alas! they are only pearls."

Never pretend to know more than you do, or you'll run foul of a snag.

A New Island.

The captain of a Danish Ship on a recent voyage from Santa Cruz to London discovered an island in lat. 33 19 N, long. 42 39 W. He anchored his ship in a sandy bay, and went ashore, and while taking an observation the crew came and told him they had discovered the body of a dead man. Proceeding to the spot he found it in a cave, in a perfect state, apparently, but dried up, with long whiskers and beard, and long yellow hair. He found also an oval box, on which some letters were inscribed, and a small boat partially construct ed, which was fastened together with something, but could find no nails. The whole of these on being handled crumbled into dust.

Ancient Sculpture.

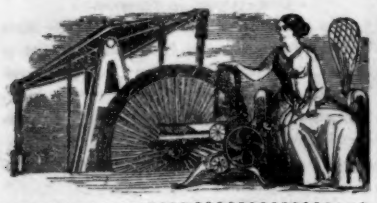
In the new Hall of the British Museum, some marble has been placed which were brought over by Sir Charles Fellowes from a temple dedicated to Harpagus, general of Cyrus, 546 years before Christ—the earliest examples of Greek Art in our possession, showing that the same principle of building and working the marble was used then as now.

Election Coffee.

At one of the borough elections, a London paper says that after some of the voters had taken their coffee before proceeding to the poll, a remarkable sediment was found in the bottoms of their cups; it was nothing less than a golden sovereign which had probably been considered an excellent substitute for sugar by those who provided the coffee.

Edmund Burke.

This Irishman, who was distinguished for his eloquence and political knowledge, was born in 1730. He was not only distinguished as an orator, but as an author his merits are universally acknowledged. He was copious, elegant, and forcible.



New Inventions.

Holcomb's Hemp Brake.

Franklin Holcomb of Newcastle, Delaware, has invented a splendid Hemp Brake which ought to arrest the attention of our northern and western farmers. It is very simple in its construction and easily managed, and seldom gets out of order if carefulness is bestowed upon it. Its cost is about $80, and it can be well worked by a two horse power. This brake, for which Mr. Holcomb has secured a patent, obviates the great evil complained of in Brakes previously invented, of breaking the fibres of the flax into short tow; the flax is operated upon by his scutching blades in straight lines whereby it is kept perfectly smooth and straight by having the breaking and cleaning done by separate cylinders.

Stump Machine.

Mr. W. Willis, of South Orange, Mass., has invented a stump machine of wonderful power A short time since, at Framington, he surprised the people by pulling out a number of white oak stumps that had searcely bogun to rot. The horizontal lever of his machine, which is moved by one yoke of oxen, gives his team great power, as the lever is 25 feet long, and the tug chain is but one foot from the pivot or fulcrum. In addition to his lever power Mr. Willis uses a triangle, over which his tug chain passes, and draws the roots up, in a perpendicular direction—the only line of draft that will draw out white oak roots. The shears are set upright ten or twelve feet high, on the side next to the lever, and as they lean, with the movement of the lever towards it, they add much to the power of the lever. They lift in proportion to their inclination from a perpendicular position. and exert a power similar to that of the toggle joint used in printing presses, &c. In a certain stage of the movement this power is immense, and probably equals the lever power, on which the oxen operate in a direct line.

Boot Crimping Machine.

Among the most useful and ingenious labor saving inventions on exhibition at the late Mechanic's Fair at Boston was a machine for crimping boots, which is pronounced by competent judges to excel every article hitherto used for similar purposes. The inventor of this machine is Mr. John E. Tucker, a poor, industrious and hard working mechanic, occupying a small shop on Canal street, Boston, where he has one of them in constant operation. The expense of the machine is about $100, and is made with nineteen pairs of "jaws" firmly fixed within a wheel, and is so constructed as to make one revolution every five minutes, and "turns out" at each revolution eleven pairs of "uppers," crimped in the most perfect manner. This invention is well worthy the attention of all manufacturers of boots, and the inventor will no doubt reap a rich harvest as the fruit of his ingenuity.

Expanding Cannon Ball.

There were exhibited at the Boston Mechanics Fair a curious destructive missile which when it leaves the cannon branches out into huge knives clearing every thing before it, more fierce than the scythes of the old Scandinavians It is the invention of Mr. William Beals of Boston.

Cotton and Wool Twist.

There was also exhibited a most excellent improvement in the manufacture of cotton wool thread. It is a machine which covers a cotton thread with wool so perfectly and beautifully that not a part of the cotton is seen. This we consider to be of great value to our manufacturing interests, as by this means a cheap and far more durable cloth can be made, than if it were all wool, very different indeed from the cloth made of cotton warp and woolen filling (weft.) The thread which we have seen made by it is really a superb article.

Ralston's Corn Plough.

Mr. Ralston of Washington county, Pennsylvania, is the inventor of the beautiful plough which bears his name, and which is now fast winning its way into favor. It consists of two diamond wing hoes, one right and one left, and also one shovel hoe working between them behind. The hoes are secured on wooden helves and these secured by screw bolts to a frame consisting of three cross bars and a pair of shafts The horse draws by traces, the shafts being used simply to transfer a portion of the draft in the form of weight to the back of the horse. The wings can be changed so as to throw the mould board either to or from the corn. It lays off corn ground in two rows at once, equi-distant, and if the land is wanted to be laid in beds, the hoes can be so arranged as to throw up the bed and open the furrow.

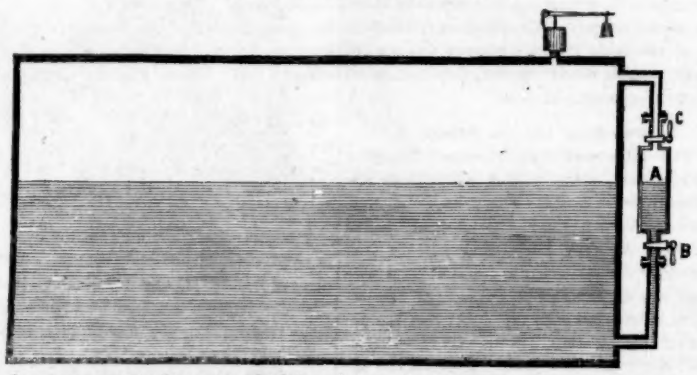
Ventilation.

Mr. Frederick Emerson of Boston, has recently perfected an ingenious apparatus for ventilating ships and dwellings, and has also applied it to chimnies to prevent them from smoking. The ventilators are stationary and are so constructed that with one he produces a current of air inward or downward, while with the other a uniform current outward or upward is kept up; and this too, whatever may be the force or direction of the wind. The ventilators are attached to tubes which pass into the hold of a vessel or the interior of buildings. Attached to chimnies, it is believed to prevent their smoking—an invention, if it should prove successful, of special importance both to city and country. A trial of them in Boston has proved them entirely satisfactory in ventilating a large public hall.

Machine for making Face Brick.

Mr. A. Woodward, of Worcester, Mass., has invented a machine for making face brick. The machine receives the clay in two open tunnels at the top, the clay being just moist enough in its natural state for adhesion, pulverizes it, and presses it under plates, forms it into moulds, each motion of the machinery making four bricks, and turns out at the rate of thirty thousand in ten hours. The bricks are then in a condition to put in the kiln.—The machine is simple, and can be worked by half the number of hands employed in making coarse brick.

UNION SAFETY GUAGE.



A, is a brass receptacle (cast,) which by a flange is connected with a wrought iron tube which enters the boiler at or near the top, and by another flange it is connected below with another wrought iron tube which enters the boiler a little above the bottom. At B, is a cock with a single passage through it, working in a four way socket. When this cock is in such a position that the passage through it corresponds with the passage in the lower iron tube leading from the boiler into A, there is a free communication between the upper and lower parts of the boiler through the upper and lower iron tubes and through A, which unites them, and the communication outwardly with A, through the horizontal passage of the socket, is of course closed; and in this position it usually stands, and if the proper quantity of water is in the boiler, whether it be foaming or not it stands in A at the *true water line*. When it is desired to ascertain the quantity of water in the boiler the cock is turned one quarter of a circle. This closes all communication between A and the lower part of the boiler, and the quantity of water cut off in A, will, by the opening of the passage leading from it through the socket horizontally being acted upon by the pressure of pure steam from the top of the boiler through the upper iron tube, be forced out and discharged into a small cup attached in some convenient way for that purpose. The capacity of the cup should be about equal to that of A, so that by the quantity received into it, it is at once known at what point the water stood in A, and that in the boiler opposite that point is the *actual* water line for the time with respect to quantity, whether there be foaming or not. When it is seen that all the water from A has been discharged and pure steam begins to issue, the cock is turned back closing the communication outwardly with A and opening again that between it and the lower part of the boiler. At C, is another cock, which usually stands open, and may be closed at the time of operating with B, to examine the state of the water, but its use is not deemed important in this respect. Its principal use will be to close the steam passage while blowing out obstructions from the lower iron tube, should it become obstructed.

Thus it is seen by the aid of one guage cock alone the true quantity of water in the boiler is ascertained in an instant, in despite of all the foaming to which they are subject, with a certainty of correct action, which leaves nothing to be desired. It is hardly necessary to mention that instead of the four way cock, two single ones may be used If it should happen, which could rarely be the case, that the boiler would foam so much as to throw water up to the top of the boiler, and that while discharging water from A, it should continue to discharge water instead of pure steam, the state of the boiler would be at once understood, and the upper cocks might be closed while discharging water from A, on a second trial. It will be seen also, that the very fact of frequently opening and closing the cocks would ensure the detection of any obstructions in the passages.

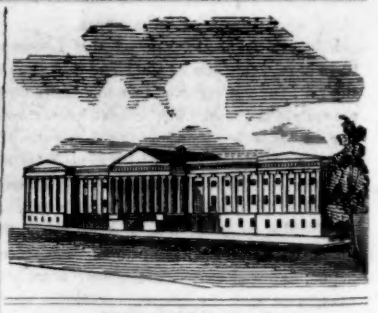
The Union Safety Guage is the invention of Mr. J. Ehcols, of Washington, D. C. Its application is only intended to be exhibited in the above engraving. It is an instrument that can be applied to any boiler, and from its simplicity and beauty, it must soon win its way into general use. It is a useful invention —its utility is past all doubt. A model of it may be seen at the Fair, No 869.

Rope Machine.

Mr. S Whipple, of Providence, R. I., has invented a new method of making rope, by which he can make a rope of any length in *a square room*—thus doing away the necessity for long ropewalks. Two twists are made at one revolution, with twisting or turning at the end of the rope, as is now the custom. The strand is formed and a rope laid in a more perfect manner, and at far greater speed than is now attained. From 150 to 200 feet of two inch rope can be thus made in a minute; smaller sizes faster. One man could tend a number of the machines at once.

Ingenious Clock.

Mr. S. Botsford, is now putting up a clock at Harper's Ferry, which is a great curiosity. There is a department in the clock with a bell attached, which is called the "tell-tale." It is to watch the watchman of the establishment, who must be on hand every half hour to pull the bell, or the register will mark his delinquency of duty.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Oct. 2d, 1847.

To Thomas Sewall, of New York, for improvement in Lard Lamps. Patented Oct. 2, 1847.

To William Simpson and Horace Adams, of Langdon, N. H., for improvement in Water Wheels. Patented Oct. 2, 1847.

To William Miller of Orrstown, Penn., for improvement in Fences to prevent injury by floods Patented Oct. 2, 1847.

To Dan. Pease, of Floyd, New York, for improvement in Smut machines. Patented Oct. 2, 1847.

To John Harrison, of Stillwater, New York, for improvement in composition for door knobs. Patented Oct. 2, 1847.

To L. H. Gibbs, of Oberlin, Ohio, for improvement in Fire Arms. Patented Oct. 2, 1847.

To Jordan L. Mott, of New York, for improvement in Cast-iron Chairs. Patented Oct. 2, 1847.

To Richard Collins, of Cabotville, Mass., for improvement in Looms. Patented Oct. 2, 1847.

Ts Abraham and Garret Van Riper, of Bergen Co. N. J., for improvement in Splint machines for Baskets. Patented Oct. 2, 1847.

To R. F. Smith, of Charleston, South Carolina, for improvement in distilling turpentine. Patented Oct. 2, 1947.

DESIGNS.

To Jacob Hemans, of Nassau, New York, for Design for Stoves. Patented Oct. 2, 1847.

To Samuel H. Ransom, (assignee of Thos. Barry,) of Albany, New York, for Design for Stoves. Patented Oct. 2, 1847.

To J. G. Gordon, of Schagticoke, New York, for Design for Stoves. Patented Oct. 2, 1847.

To Viall and Warren, (assignees of Jeremiah D. Green, of Troy, New York, for Design for Stoves. Patented Oct 2, 1847.

INVENTIONS AND CLAIMS.

Improved Wiffletrees.

Invented by John Laughlin, of Gettyburgh. Penn. Patented 7th August, 1847. What he claims as his invention, and secures by Letters Patent, is the combination of the lever (E) with the spring bolt for attaching the traces to the single tree and detaching them therfrom, substantially in the manner and for the purpose set forth.

Fire Grate.

Invented by William H. Pulver, of Troy, N. Y. Patented August 7th, 1847. What he claims as his invention, and secures by letters Patent, is the manner of dividing the grate into compartments by means of soriated or interlacing bars or teeth, having an oscillatory or semi-revolving motion with the transverse bars, of which they form a part, or to which they are united; and this in combinatian with the rock shaft, through which the said motion is propagated from the lever.

Self-acting Cheese Press.

Invented by Chester Stone, of Rootstown, Ohio Patented 7th August, 1847. What he claims as his invention, and secures by letters patent, is connecting the two lever frames and the platen or follower together by a central rod, midway between the points of support of the lever frames, when this is combined with the supporting of the bed of the press on the two fulcrum rods attached to the lever frames on each side of the central rod or connection of the two lever frames and platen, whereby the levers of the press answer the purpose of legs or supports for the whole press, and by which also the whole weight of the frame and all other parts of the press act on the lever purchase to give the required pressure.

NEW YORK, OCTOBER 9, 1847.

Telegraphs.

Signals for telegraphing news rapidly to great distances have been employed from time immemorial. The mounds scattered throughout Europe and America, were no doubt used for such purposes as well as for places of defence. The Romans had towers erected on their great roads at certain distances, and on commanding situations, so that a light hung out on a wall could be replied to, or conveyed as intelligence, hundreds of miles in a few hours. The cairns in England, Ireland and Scotland, were undoubtedly used for the same purposes, as they are all placed upon commanding heights and tradition corroborates the supposition. In Ireland the tradition is that the Danes erected these mounds. In Scotland the tradition is, that the Picts erected them and that they were used to give warning of danger to other places, by lighting a fire on one, which in a short time would be replied to by thousands "flashing on hills and mountains stern." In Switzerland the same system is often used at the present day, and frequently has it been used in Britain during the last ten years by the peasantry in rural districts.

With the progress of physical science the means of conveying intelligence rapidly have not been neglected, and it is no longer a desideratum—it is a discovery. On the wings of the swift lightning the thoughts of man can now be conveyed from sea to sea. The first idea of employing lightning—electricity—for the purpose of conveying intelligence was suggested by the grand discoverer himself, Benjamin Franklin, but the success of the application was destined for another.

From every source which has been opened unto us for examination, it would appear that Prof. Summering of Bavaria was the first to employ the galvanic agency to telegraphing.—He constructed in 1807, a model in the University buildings of Munich, but he employed 35 wires and it was found to be practically useless. In 1833 Gauss and Weber commenced a series of telegraphic communications respecting observations making at the Observatory and the Physical Institute at Gottingen. Their telegraph had only two wires, and was successfully worked for some years. In 1836 the directors of the Leipsic Dresden Railway voted two thousand dollars for experiments on Gauss and Weber's plan, but they failed. In 1840 Mr. Wheatston employed first successfully his telegraph on the Great Western Railway The first telegraphs constructed in England were composd of a number of wires isolated in glass tubes, operated on by keys nearly like House's. In 1837 a telegraphic model of a machine was exhibited by Wm. Alexander, before the Society of Arts in Edinburgh, and this was the first time the thing was brought in a tangible shape before the public in Britain. Mr. Alexander's apparatus had thirty copper wires for the 26 letters of the alphabet, the points and an asterisk. It was operated on like a piano. We have been informed that the subject of Morse's Telegraph was suggested to the Professor's mind in 1835, and Wheatson conceived the idea of his telegraph in 1837. Morse's plan is different from Wheatston's and is so well known that a description is superfluous. It is simple and a knowledge of it has been scattered throughout the land by a pamphlet published two years ago.

There is now another system of telegraphing which in regard to interests, conflicts with Professor Morse's. It is the invention of Mr. House, and instead of an alphabet of dots and lines made by a point like Morse's, it prints distinct Roman letters. An operator by it in Cincinnati can print his message in Louisville. The appearance of the machine is something like a piano. It has keys labelled like the letters of the alphabet and upon the top of the box is a small horizontal steel wheel, upon the edge of which every letter is cut. Around a perpendicular cylinder standing near the wheel passes a narrow ribbon saturated with ink, and beween it and the wheel passes also a narrow slip of paper; upon touching the key A for instance, the little wheel revolves as quick as thought, until A is presented to the cylinder, which at the same instant strikes laterally, driving the paper and ribbon against the letter and makes the impression.

There are many claims to originality in regard to the first inventor of the electric telegraph, but previous to all the inventions and applications we have mentioned, there is a passage in Young's Travels in France, published in 1787, which states that it was known at that period in that country and practised to some extent, by a gentleman named Lomond, which, if true, throws darkness upon the light of more modern inventors.

Railroads of New York State.

In an excellent article from the pen of Mr. C. B. Stuart, Chief Engineer on the Great Western Canada Railway, which appeared in the American Railroad Journal a short time ago, it appears that there are 754½ miles of rail road in New York, 107 locomotives and 893 passenger and other cars. There is one thing which shows an evident difference in business or traffic on the different roads, viz. the number of locomotives employed. On the Hudson and Mohawk there are six engines for 17 miles of railroad, while on the Lockport and Niagara Falls Railroad there are only two engines employed. On the Utica and Schenectady Railroad there are 15 locomotives for 78 miles of road and on the Auburn and Rochester, of the same length, there are only 10. On the Long Island Railroad of 96 miles, there are 15 locomotives, the same number as for the 78 miles of the Utica and Schenectady road. There is a united interest in 70 cars on five roads, viz. the Albany or Mohawk, Utica, Syracuse, and the Auburn and Rochester.—They are adding to these roads at the rate of three cars per week. The wear and tear of engines on the whole Western route last winter was enormous, from the great amount of freight for the Atlantic markets. A contract was made last winter by the Directors of the five united Roads for more than one hundred cars.

Yankee Industry and Thrift.

The following facts are stated in the Bunker Hill Aurora :—

We were somewhat surprised the other day to learn that the children in the interior towns who occupy their time in picking berries, during the season of them, earn upon an average, about one dollar per day, and the largest part of the money finds its way into the Savings Banks of the State. The women also frequently engage in this business, and we have heard of two cases of female industry and profit, in the town of Lincoln, which appear to us to be worth mentioning, one woman did all the home work for her family and earned *eight dollars* per week in picking berries; and in the other case a woman and her daughter did all the work for the family, having several men to work upon the farm, took care of the dairy of eight cows, and earned *fifty dollars* in one month, in picking berries. We imagine these instances are not singular, and probably similar cases of industry and thrift may be found in almost every country town in the State, and they are illustrative of the character of the people.

New Factory.

The new factory of the Messrs. Howell, paper hangers, is now nearly completed, and will be in operation in about a month. This factory is the most commanding building and is the longest manufactory (being almost four hundred feet in length) in Philadelphia; and will give employment to some two hundred hands. The building is ornamented by a cupola, which affords a magnificent panoramic view of the city and its environs. There is to be a vane and ball on the cupola, surmounted by a liberty cap—and probably a bell and clock may be added

The medical profession of Tennessee propose holding a convention on the 25th of next month, for the purpose among other things of "elevating the profession."

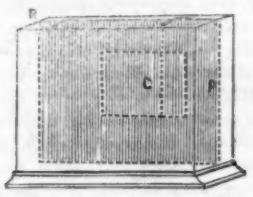
Electrotype and Electro-Gilding.

This new science is intimately connected with Voltaic Electricity, and was discovered by Mr. Thomas Spencer, of Liverpool, who publicly brought it into notice at a meeting of the Liverpool Polytechnic Society Sept. 12th, 1830, and what is very singular, it was discovered by M. Jacobini, at the very same time.—Unknown to each other these men had separately made the same discovery and both had made applications for a patent at the very same time, which were not granted because neither could agree to take it out jointly — This science relates to the depositing principle of galvanism. Or, to be more plain, it is well known that however hard the crystals of metals are, and however insoluble in water, they can easily be made transparent and soluble in acids and in that state mix easily with water. Now the electrotype is the science of separating the metals from their acidulous combination and making them adhere to a peculiar substance and in in a peculiar manner, in other words, by the electric agency the metal or metals are separated from the acid and deposited where the electrician desires and in what form he chooses, such as taking fac similies of metals, engravings &c. As we purpose to give a series of articles on this science and make it so plain that any amateur can perform beautiful experiments, it is necessary that we should state the ruling and positive principles of the science.

In the first place : If a piece of zinc and a piece of copper be attached one to each end of a wire, and the two be placed in a vessel containing acidulated water, an electric current will immediately be generated, or rather a transfer of electricity takes place between the two metals. The positive electricity passes from the zinc through the liquor to the copper and countinues its course along the wire. The fundamental principle is, that the passage of the electricity is from the zinc to the copper The positive is the end where the electricity leaves the battery. The science then of Electrotype consists in preparing for negative plates moulds of a certain form of objects to be copied and in so arranging the apparatus which generates the voltaic current so as to release the metals in a compact form.

The first plan for performing such operations, but on which great improvements have been made, as we shall show in the progress of our work, was that employed by Messrs. Spencer and Jordan, as exhibited in the following cut.

Fig. 1.



This is a box divided lengthwise by a porous partition P, of soft maple boiled in acid, making two chambers of unequal size, the one for the zinc being one-third the size of that for the copper. C, is a copper plate suspended in the box connected with a plate of zinc passing over the division of the box R. In the cell containing the copper is a strong solution of the sulphate of copper and in the cell of the zinc a solution of diluted sulphuric acid, and the two plates were connected by a copper wire. Face to face with the copper plate was another wire, in connection, on which was the mould to be coppered, and from the time the galvanic current was observed to proceed from the zinc cell, so gradually was there a deposition of copper on the other end of the wire on the mould. Moulds for this purpose are peculiarly made, or the effect will not be produced. The process of taking correct plates occupies at least three days, but we shall describe these things more fully as we proceed, until we have illustrated and explained minutely the whole science of electro-metallurgy and electro-plating.

The Cunard Line of Steamers.

We see, by a report of a select committee in the House of Lords, that the British Government receives, in postages, from Cunard's line more than it pays. Cunard receives £80,860 and the postage received is £83,024. No other line pays at all.

Impracticable and Visionary.

A correspondent of the *National Era* communicates the following extract from a letter of Robert R. Livingston, former Chancellor of this state, to Mr. John Stephens. We commend it to the consideration of those wise persons who cry "impossible" to every new plan for the good of mankind.

Albany, March 11, 1811.

"Dear Sir : I did not till yesterday receive yours of the 25th of February : where it has loitered on the road I am at a loss to say. I had before read your very ingenious proposition as to the railway communication. I fear, however, on mature reflection, that they will be liable to serious objections, and ultimately more expensive than a canal. They must be *double* so as to prevent the danger of two such heavy bodies meeting. The *walls* on which they are placed must be at least four feet below the surface, and three above, and must be clamped with iron ; and then would hardly sustain so heavy a weight as you propose moving at the rate of *four* miles an hour on wheels. As to wood, it would not last a week. They must be covered with iron, and that too, very thick and strong. The means of stopping these heavy carriages without a *great shock*, and of preventing them from running upon each other, (for there would be many upon the road at once,) would be very difficult in case of accidental stops, or the necessary stops to take wood and water, &c., many accidents would happen. The carriage of condensing water would be very troublesome. Upon the whole, I fear the expense would be much greater than that of canals, without being so convenient."

A Lucky Fellow.

On Monday night a three story brick building occupied for turning and sawing and the manufacture of gothic and fancy cabinet ware in Lewis street Philadelphia, fell to the ground and the foreman of the establishment who slept in the second story, was precipitated into the mass of ruins unconscious of any thing until he realized a lodgment among lumber, bricks, &c. Fortunately his bedding went with him, and he escaped without injury. This is the second instance of this individual's having had a house fall to pieces around him. The other time he received a slight wound.

Coal in Maine.

It is expected that it will not be necessary to import coal from Pictou for the large rolling mill now constructing in Boston, as a vein has been discovered on the St. Croix river in Maine, which is supposed to be a continuation of the great Pictou field. Explorations are now going on to prove the supposition.

Starch.

There is now starch made from potatoes in N. England, 22,000 lbs. annually. There are 160 establishments engaged in its manufacture, principally in Maine and Vermont. Much of it is shipped to England. It is used in finishing many kinds of fabrics—by confectioners, and finds its way into neat packages, with the label of Arrow Root for puddings.

Scientific American—Bound Volumes.

The second volume of the Scientific American, bound in a superb manner, containing 416 pages choice reading matter, a list of all the patents granted at the United States Patent Office during the year, and illustrated with over 300 beautiful descriptive engravings of new and improved machines, for sale at this office—Price $2,75. The volume may also be had in sheets, in suitable form for mailing—$2.

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Horse Power of Engines.

The stroke of an engine is equal to one revolution of the crank shaft—but when stating the length of stroke, the length of cylinder only is given besides an allowance for the piston. To calculate the power of an engine, multiply the area of the cylinder by the effective pressure and the product is the weight the engine can raise. Multiply this weight by the number of feet the piston travels in one minute and you will have the weight the engine can lift one foot high per minute; divide this weight by a horse power and the quotient will be the number of horse powers the engine is equal to.

EXAMPLE.

What is the power of an engine, the cylinder being 42 inches in diameter and the stroke five feet at a maximum pressure of 10 lbs. to to the square inch, and making 25 strokes per minute?

Square the diameter and multiply by the decimal 7854 and you have the area—
42X42X·7854=1385·4496X10X210—the number of feet the piston travels in a minute
$=\frac{2909444\cdot1600}{33000}$=88 1-6 horse power.

But it will easily be seen that if the pressure of steam be doubled and the amount of strokes made per minute be doubled in the same size of cylinder, that the effective power will be increased nearly double, as the steam is the power. But on this point there would be a difference of opinions, and it is well known that engines of a certain power neither can propel a train of cars, or a steamboat, with double the speed of an engine of half the same power. Therefore, neither can double the pressure of steam on a piston above the maximum of 10 lbs cause the piston to travel double as fast. With an increase of speed, so is there also a greater amount of resistance from friction, both in the engine itself and whatever it may be driving.

A writer in the National Intelligencer, says that the term "horse power," is conventional and that the power raises with the pressure on the piston, and states that while condensing engines vary in the pressure upon the square inch from 10 to 30 lbs., high pressure engines have a pressure from 60 to 120 lbs. and sometimes more on the square inch By the above calculations it will be perceived that he is correct, but it is generally conceded that three-tenths of the horse power should be deducted for friction. &c., giving seven-tenths for the effective power. It would be a good plan if the engineers of the United States would hold a convention, say two years from this period, and until that time be keeping a regular register of the effective power of various engines according to their consumption of fuel, and then compare their observations and establish a fixed table of horse power and a maximum of steam pressure, so that tables might be prepared upon that maximum and a uniform system be established throughout the country. As it is, 33,000 lbs. seems to be the settled conventional and universal weight of a horse power.

Power.

Mr. Editor :—

If the following calculations are worthy a place in your useful paper, please insert them.

A piston four feet in diameter, has a circumference of 150·7963 inches nearly, and an area of 1809·5616 inches, which area, under a pressure of 150 lbs. to the inch, affords a pressure of 121·17* tons.

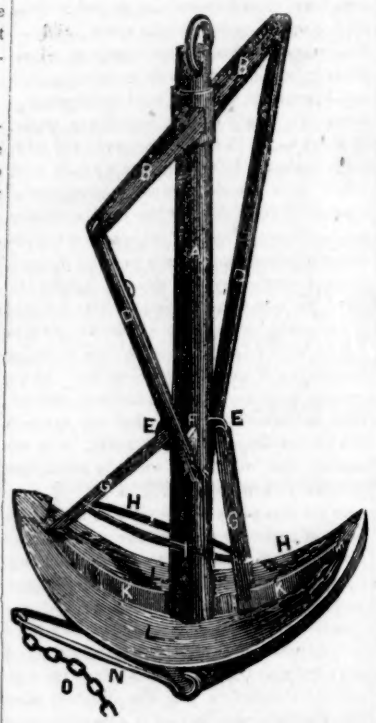
A wheel, 16 feet in diameter, and whose shaft is one foot in diameter, and is propelled by a power of 120 tons, will exert a force equal to 7 1-2 tons, at its periphery; and a similar wheel, propelled by a force of 16,500 lbs. at the shaft, will exercise a power at its circumference of 2000 lbs. or a 14 horse power; and if these wheels be geared so as to move together, one revolution of the shaft, where the force of 120 tons acts, would give 256 revolutions to the third shaft, so that if the first shaft be 3 minutes in performing one revolution, the third shaft will give 85 1-3 revolutions in the same space of time. And if the rack work which turns the first shaft, be twelve feet long, the shaft of the machinery will be twelve minutes in ascending and twelve in descending. J. S. G.

Carlisle, Pa. Oct. 1847.

P. S.—I shall feel obliged to any of your intelligent correspondents if they will inform me, through your interesting and valuable journal, of the best method of bending glass.

*Is this correct?—ED.

Isaac & Watkins' Self-clearing Anchor.



The attention of those engaged and experienced in the Marine and Commercial Departments, acquainted with and know the dangers arising from and losses caused by the common anchor in general use, are called to the new improvements in anchors, lately made and patented by Isaacs and Watkins, of this city, that has in a great measure obviated these dangers. The most important advantages of these anchors over the old ones, are as follows:

They prevent the cable from fouling on them, while vessels are riding at single anchor. The stock is braced in such a manner as to prevent the cable from fouling on it, and to prevent it from bending or breaking, an occurrence so frequent with the usual iron stocked anchor. When this anchor is on the gunwale, the sheets or sails are not so liable to foul or tear on the stock, an occurrence frequent with the usual anchor stock, especially in heavy weather when going in stays. This anchor can also be cast from the gunwale, without the tedious use of the handspike, and it is believed that in consequence of the palms joining at the shank, it will take a firmer grip in the soil than the ordinary anchors, and thereby afford greater security to vessels riding to them, and it can be unshipped or taken apart for stowage and housing.

DESCRIPTION.—A, is the shank of the anchor. B, is the stock. D D, are stays which clear the cable from the stock, and also tend to strengthen it. G G, are lifting fluke guards secured on the shank of the anchor at E E, hung by a bolt on which they move, and are extended apart near the flukes by the braces I I. K K, are guides for the lifting fluke guards formed by a ridge secured on the palms of the anchor and extended from the crown to the bills, so that when either fluke enters the soil, the lower guard rests on it, and as it penetrates, the lower fluke guard is driven by the earth to the shank of the anchor, thus the opposite guard is forced to the bill on the arms on which it moves, thus forming an angle on which no cable can foul. L L, are palms extending from the bills to the crown of the anchor. N, is a follower hung on strong studs on each side of the crown, the other end of which when the anchor is at work, falls to the earth on which it rests, and thus forms an incline plane from it to the crown, guarding it from the usual danger of the cable fouling or getting under it, when by any means it is brought in the rear of the anchor. O, is the chain or trail piece, hung on the follower N, by which the anchor can easily be fished with a light grappel, thus in heavy ships dispensing with the ponderous fish hook.

This anchor has been highly recommended by some of the highest officers in the United States Navy.

Gun Cotton.

Mr. Editor :—Ever since the discovery of Gun Cotton was made public, I have been desirous of testing its merits in "rifle shooting." A short time since, having a favorable opportunity, I procured a small quantity for the purpose of trying the experiment. I had a fine cast steel rifle, the barrel weighing 12 pounds, with a bore of 75 round balls to the pound.—This rifle was very carefully charged with about 12 grains of the cotton, that being less than one quarter of an ordinary charge of rifle powder; a lead ball in the form of a cone was then put down, which completed the load.—On discharging the rifle, about five inches of the breech end of the barrel together with the lock, were completely blown to pieces. One piece weighing 8 ounces was carried through the roof of the building, out of which I fired. Fortunately for myself, I occupied about the only safe place in that neighborhood; as it was, however, my left hand was slightly injured. I will state here, that I have no interest whatever either in the manufacture, sale or use of gun cotton or powder. My only object in making the above facts public is to caution others who may have a curiosity to try the virtues of "Gun Cotton." Any one feeling interested may learn more in relation to this subject, by calling at 37 Norfolk street, or at the machine shop of R. Hoe & Co., corner of Broome and Skeriff streets.

GILBERT SMITH.

New York, Oct. 2, 1847.

How the Peruvians use Guano.

Much has recently been written on the employment and use of guano; but the manner in which it is applied as manure in Peru seems to be but little known. The Peruvians use it chiefly in the cultivation of maize and potatoes. A few weeks after the seeds begin to shoot, a little hollow is dug round each root and is filled up with guano, which is afterwards covered with a layer of earth. After the lapse of 12 or 15 hours, the whole field is laid under water and is left in that state for some hours. Of the *Guano Blanco* a less quantity suffices, and the field must be more speedily and abundantly watered, otherwise the roots would be destroyed. The effect of this manure is incredibly rapid. In a few days the growth of the plant is doubled If the manure be repeated a second time, but in smaller quantity a rich harvest is certain. At least, the produce will be three fold that which would have been obtained from the unmanured soil. The hacienda of the valley of Chancay have, during the last fifty years, consumed annually from 33,000 to 36,000 bushels of guano brought from the islands of Chincha, and Pisco. The price of the bushel of colored guano is one dollar and a quarter, and the price of the white from two to three dollars The price has recently undergone many fluctuations, in consequence of the great exports to Europe. The employment of this kind of manure is very ancient in Peru; and there is authentic evidence of its having been used in the time of the Incas. The white guano was then chiefly found on the islands opposite to Chincha; so that for upwards of 600 years the deposit has been gradually removed from those islands without any apparent decrease of the accumulation. The uniformity of climate on a coast where there is not much rain must contribute to render the Peruvian guano a more arid manure than the African, as fewer of the saline particles of the former being in solution, they are consequently less subject to evaporation. [Von Tshudi's Travels in Peru.

Profitable Stock.

The Bangor Whig states that Gen. Veazie, of that city, has disposed of his franchise in the Penobscot Boom to David Pingree, of Salem, Mass., for the sum of $55,000. The boom has always been a profitable piece of property, and it is estimated that it will yield the present season, the net revenue of $25,000.

The Thermal Telescope.

We find the following among the proceedings of the Association of Geologists:

Professor Henry, of Princeton, N.J., communicated some interesting experiments, showing the analogy between light and heat. The experiments were made with a Therno Electrical apparatus, a very delicate instrument, which will indicate 1-500th of a degree of a Fahrenheit thermometer. It has been long known that two rays of light may be so thrown on each other as to produce darknesr Professor H. showed that two rays of heat might be so combined as to produce cold. Light and heat differ with respect to the length of the waves, those of the latter are longer than those of the former. Experiments were made upon flames. Some flames give little light, but intense heat; as, for instance, the flame of hydrogen gas. If a solid body is plunged into such a flame, the radiant heat will be increased as well as the radiant light.

Experiments made upon the spots of the sun showed that they were colder than the surrounding parts; also, that the surface of that body was variously heated.

The apparatus was applied to form a Thernal Telescope: when turned to the heavens the coldest part was found to be directly over head. Thunder clouds, sending forth flashes of lightning, were found to be colder than the surrounding clouds. When turned to the moon there were some slight traces of heat, but those were proved to be from the reflected heat of the sun. He showed this to be the case by an experiment which he performed on ice. In this experiment the ice resisted heat. It has long been known that a burning lens could be made of ice. The Thermo Electrical Telescope is capable of an infinite improvement. When in a state of perfection it may reveal many new and interesting facts in astronomy, which thus far have only been opened to sight.

A Puzzler.

A writer in the Baptist Register proposes the following inquiry.

"If a Mr. Randall is blessed with a son, whom he names Ezra, and if Mr. R., upon the death of Ezra's mother, marries the daughter of Mr. Alvord, who a few years before had lost his wife, and who subsequently, by a second wife, is blessed with a daughter that is named Mary, but who lives not long to lament the early death of his first daughter Mrs. Randall, or enjoy the society of his companion and daughter Mary: and if, after his death, Mr. Randall takes for his third wife the former wife of his father-in-law, and if his son Ezra choose to marry the daughter of his father's third wife, Miss Mary Alvord, will any law, human or divine, be broken, and what relation will Ezra be to his father, or his children to his father's wife?"

File Bite File.

A Yankee who has invented a new kind of "love-letter ink," and which he has been selling as a sure safeguard against all actions for breaches of marriage promise, inasmuch as it entirely fades from the paper in two months from date, was recently most "awfully done brown," by a brother Down Easter, who purchased a hundred boxes of the article, giving him his note therefor at ninety days. At the expiration of the time the ink inventor called for payment, but, on unfolding the scrip, found nothing but a blank paper! The note had been written with his own ink!

Prevalence of Rain.

It is little known, that the further we go South, until we reach the equator, the more the rain increases. Thus, at St. Petersbug, there falls annually, 17½ inches of rain; while at Vera Cruz there falls nearly 64 inches. The explanation of this is that, in warm climates, evaporation proceeds more vigorously; hence more vapors and clouds arise, and of consequence there are more showers.

A Heavy Load.

A late Cincinnatti paper in speaking of a drunken scoundrel who was caught by the police and lodged in jail, says; "Three or four stolen sheep, and a pair of saddle bags were found upon his person."

TO CORRESPONDENTS.

"W. P. B. of Georgia"—From your description of the Moving Power, it is undoubtedly an invention of great utility, but as it regards its qualities we could not judge without some more information on the subject. If it is so simple and cheap and correct, it is well worthy of a patent.

"D. H. P. of Mass.—We could have given you all the necessary information about the organic vibrator last week, but it may be some time before we can do so again.

"H. R. of Ohio"—In the article on telegraphs you will get some information which you can appreciate because of its rarity.

"H. B. of Mass."—We believe that no roof covering can equal shingles, or what is better, good Welsh slate for houses near the seaboard. You will be the best judge respecting the economy. Shingles are cheaper at first, but do not last as long as the slate.

"R V. of Mass."—You will receive the desired information respecting reacting wheels in some future number.

"J. B of Vt."—The whole subject to which you refer, together with information relating to the Patent Laws, can be found in the early numbers of volume 2, of the Scientific American.

"W P. of N. Y."—We have sent you Scribner's Engineer's Companion as requested.

"L. R. of Ohio."—You will perceive that we have attended to your wishes in the article "Horse Power."

"R. T. of Pa."—The acetate of lead is vulgarly called the sugar of lead. Its combination with the chromate of potass makes the beautiful yellow of the dyer and painter.

T. C. F. of Ohio."—We shall be happy to hear from you again. The negligence you complain of we think will be remedied. The cause must increase if all do their duty.

"C. P. of N. Y."—The application of the pendulum to propel machinery is not new. What is a clock but a machine constructed upon that principle? But the application to propel other machines than clocks may justly be called a new invention if it has not been applied to such a machine before. There can be no doubt but it would do well to propel light machinery and for such a purpose be an economical power.

"Mechanic's Mutual No. 9, Waterloo"—We are much obliged to you for your kindness, and appreciate your expressions of good will. The committee appointed by the U. S. Convention to examine the P.G. Secretary's Books feel that they did not formerly understand the whole matter. and that the G. S. is correct. In a short time a document explantory will be sent to all the Protections

"——, Oriskany Falls, N. Y."—If the gentleman from this place who sent us two dollars and did not attach any name to his communication, will inform us who to direct the papers to, we will comply with his request.

Launch of the Bremen Steamer.

The new steamer *Hermann*, the second of the U. S. Mail line between this port, Southampton and Bremen, was launched last Thursday afternoon from the yard of Messrs. Westervelt & Mackay, Seventh-st. Her dimensions are: Length on deck, 245 feet; width 41; 41 deep; 41 beam; and her tonnage will not vary much from 1,800 tons. She has been about seven months in building, the keel having been laid in the early part of this year. The machinery was manufactured at the "Novelty works" of Stillman, Allen & Co., and is prepared to go in immediately.

The builders are of opinion that this vessel has more cubic feet of timber and more fastenings than any ship of the size ever built. She is rigged ship or more properly speaking bark fashion. She is to be commanded by Capt. E. Crabtree; will accommodate 150 cabin passengers; the saloons and state-rooms will be of beautiful construction; and it is thought she will be ready to make her first trip by the 23rd January next.

The keel of the third ship of the same line, we are informed, will be laid in a short ttme.

A farmer's wife in New Connecticut, Ohio, is preparing an immense cheese for a present to Queen Victoria. With some few of her neighbors, she has procured the milk of 500 cows for one day. The production is a cheese weighing 600 lbs.

Torpedo Electric Machines.

Our readers are referred to the advertisment of these machines in another column where the reasons are given why Dr. S. B. Smith's Electric machines are the best kind in use. Read Dr. Hallock's certificate in this week's paper and look for others in our next.

Fashionable Tailoring Establishment.

Mr. D. H Steele, formerly of the firm of Steele & St. John, 27 John St., has received a splendid assortment of Fall and Winter Cloths, which he can make into garments as fashionable, as cheap and as well, as any other Tailor in the city. To those who wish to be honestly dealt with, and desire a fashionable garment, we would recommend them to this establishment.

Chambers' Miscellany.

No. 4 of this publication is received and like the former numbers is unsurpassed for interest by any work of the kind out. Berford & Co., Publishers, 2 Astor House.

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Applications for Patents made at this office, on the most reasonable terms. Neat drawings, specifications, and engravings of the first character, and cheaper than anywhere else. Notices of new inventions, Agency for the sale of Patent Rights, and all business of that nature, promptly attended to. Those who have patent rights to dispose of will find a good opportunity and field for their sale—such as Horse Power Machines and Waterwheels of every description. The largest circulation in the world for advertisements of inventions, &c.

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W. A. ASHE'S Drawings have gained him many prizes in several Mechanics' Institutions in Europe, and great reputation in the Patent Office, Washington, and the Mechanics' Institute, Brooklyn, (where he was a teacher for two years,) and among the various Patent Agents of this city. As the classes will be limited, an early application will be necessary to insure admittance.

For terms and particulars, apply to W. A. Ashe, at his establishment, 133 Fulton street, opposite the Sun Buildings. o9

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WOOD CUTS.

☞ We would inform Newspaper and Periodical publishers that we have on hand a large lot of Wood Engravings, which have been used in the Scientific American during the past year, which we are desirous of disposing of cheap. They are in fine order and may be had at one fourth of their original cost. Publishers of country papers would find it to their interest to avail themselves of this chance to illustrate their publications at a cheap rate.

Address at this Office. s18 tf

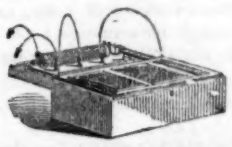
Johnson's Improved Shingle Machine.

THE Subscriber having received Letters Patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one eighth mere shingles can be sawed in the same given time than by any other machine now in use.

Augusta, Maine, Oct. 1, 1847. J. G. JOHNSON.

Machinists Tools.

THE Subscriber is now manufacturing a superior article of Large Turning and Screw Cutting Lathes, Drilling Machines, &c. to which he would respectfully call the attention of Machinists and others requiring the above articles. Also, Machinery of every description, manufactured to order, at 42 Gold street, New York. G. B HARTSON. o2 1m*



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Dr. Smith—Dear Sir: In my last I gave you a brief statement of a cure of inflammatory rheumatism, effected mainly by your Torpedo Magnetic Machine, and promised to state why I considered it an improvement on others And first; it runs with greater regularity. I have never to my recollection had to touch the hammer a secon! time since it has been in use. When the machine starts it goes right on. In addition to this, which is no small convenience to the operator, by your machine we can get the current direct from the copper of the battery, which being the most effective, as is easily demonstrated can be applied directly to the affected part, and at the same time that its superior power is thus applied, it affords a perfect protection to the operator as this pure current passes through him uncontaminated by the disease of the patient to which he is applying it. I have many interesting cases of cure to communicate, and from time to time shall do it.

Yours truly. R. T. HALLOCK, 174 Chambers st.

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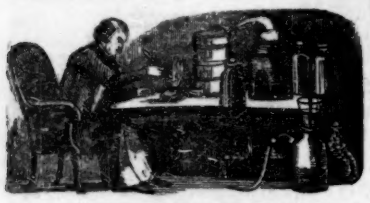


Hydrogen Gas.

Water is a compound of two bodies which exist naturally in the state of gas; the one is hydrogen and the other oxygen. If we introduce into a bottle one ounce of clean iron filings and pour upon them a mixture of sulphuric acid, in the proportion of one of acid to six of water cautiously, hydrogen gas will be evolved in great quantities.

EXPLANATION.—The iron filings do not make nor give out the hydrogen, nor the acid, but the water The oxygen of the water leaves the hydrogen and becomes incorporated with the iron, forming the oxyde of iron. The gas may be caught in a receiver, on the pneumatic trough. The use of the acid is to act upon the iron so that a clean surface may always be exposed to the oxygen of the water. The residue of this experiment may be vaporized and the crystals formed will be the sulphate of iron—common copperas,—a drug used in stomachics by the physician, and much used he dyer for making blues on cotton and for making variations in the shades of different browns. It is also the basis of blacks

On the difference which exists between Gilding by the use of Mercury and Electro-Gilding.

We have been frequently called upon to solve the following question,—viz. "By what means had a certain article of copper or silver been gilded?" This could not possibly be ascertained with certainty by mere inspection, even by the most experienced eye. M. Barral has, however, discovered a certain means of ascertaining the fact by chemical reaction. He has found that by attacking the articles to be tested with dilute nitric acid, either warm or cold, pellicles of gold are obtained, of the exact form of the article; provided the acid be not allowed to act too energetically These pellicles are of a yellow gold colour on both sides when obtained from articles gilt by simple immersion in an alkaline solution of gold, or by means of the galvanic current decomposing certain solutions. On the contrary, the pellicles produced on the surfaces of articles gilt by mercury are of a reddish brown colo on the side next the surfaces of the articles gilt. In order to explain this difference in the appearance of the pellicles of gold, M. Barral first had certain articles gilt by the mercury process with certain quantities of gold. The articles thus gilt, on being acted upon by dilute nitric acid. furnished pellicles of gold of a deep brown color on their inner faces, and heavier than the gold originally employed in the gilding process. The pellicles not dissolved by the acid were therefore not pure gold. They were proved by direct analysis to contain about three per cent of copper or silver, according to which of these two substances the gilt article was formed. M. Barral, therefore, considers it evident that when the amalgam of gold is applied to the surface of an article, a double amalgam of gold and copper or silver is formed. If the article be then submitted to heat, the mercury will be volatized, and an alloy will be formed, thereby uniting the precious metal and the metal of which the article is formed. If the article gilt be then acted upon by the nitric acid, the metal of which it is formed will be completely dissolved, and the acid will act upon the alloy, and carry off the copper or silver near the inner surface, where the gold is in small quantity. But, as the proportion of gold increases near the outer surface, it will preserve the other metal from dissolution, as is well known to be the case with all alloys in which gold predominates. It will, therefore, be understood, that the pellicles detached from the articles gilt with mercury must be covered on their inner surface, after being acted on by the nitric acid, with a very thin layer of gold, which gives it a brown color; this will also explain the reason why nitric acid leaves the gold in an impure state after the destruction of the base metal of the articles. When an article to be tested has been gilt by electro-chemical means, it will be found that the pellicle of gold covers the copper or silver, without amalgamating therewith; and therefore, the nitric act upon the layer of gold. The foregoing explanation proves the new methods of gilding to be less solid than the old ones; for it is evident that a layer merely laid on like a coat of paint, cannot adhere so tenaciously as when the metals are to a certain extent incorporated. Experience has proved, however, that the processes of electro-gilding and gilding by simple immersion possess certain advantages over the old methods. The pellicle obtained by from the gilding by mercury, when held up to the light, presents an appearance of being perforated with numerous fine holes; this effect is produced by the passage of the mercury through the gilding when driven off by evaporation. Layers of gold deposited by a battery or by immersion are, however, perfect coatings; and, consequently, for domestic purposes—especially for vessels intended to come in contact with acids—copper articles, gilt by the mercury process, possess disadvantages which are obviated entirely by the new process.

Natural Gas Jets.

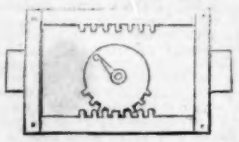
We learn from Chambers Edinburgh Journal that at the village of Wigmore in Herefordshire, there are fields which may be, and two houses which are, lit up with a natural gas. This vapor, with which the subjacent strata seems to be charged, is obtained in the following manner;—A hole is made in the cellar of the house, or other locality, with an iron rod; a hollow tube is then placed therein, fitted with a burner similar to those used for ordinary gas lights, and immediately on applying a flame to the jet, a soft and brilliant light is obtained, which may be kept burning at pleasure. The gas is very pure, quite free from any offensive smell, and does not stain the ceilings, as is generally the case with the manufactured article, Besides lighting rooms, &c., it has been used for cooking; and indeed seems capable of the same applications as prepared carburetted hydrogen. There are several fields in which this phenomenon exists, and children are seen boring holes, and setting the gas alight for amusement. It is now about twelve months since the discovery was made; and a great many of the curious have visited, and still continue to visit the spot.

Powder Detonating with a Purple Light.

Boil four parts of nitric acid on one part of indigo: the solution becomes yellow, and a resinous matter appears on the surface. Stop the boiling; let it cool: remove the resinous matter, and gently evaporate the solution to the consistency of honey. Re-dissolve it in hot water; filter; a solution of potash will throw down yellow spicular crystals consisting of *bitter principle*, combined with potash. These crystals have the curious power of detonating with a purple light when wrapped in paper and struck by the hammer. The resin by being treated again with nitric acid, is converted into the same bitter principle.

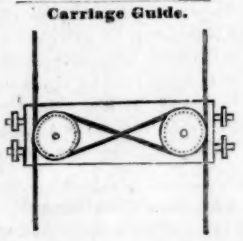
MECHANICAL MOVEMENTS.

Traverse Motion.



The application of eccentrics is one of the most beautiful, although one of the most difficult parts connected with mechanism, to learn. The movement of heavy carriages for the purpose of turning heavy shafts by moving steadily in one direction and then returning, continually going through the same operation, was long a desired object and its accomplishment was the result of an acquaintance with the principle exemplified in the above cut. In the centre of the rack carriage is a wheel notched on the radius, and as it moves the carriage moves in one direction till the notched radius clears the rack of the carriage, when the upper rack is catched by the wheel and another movement given to the carriage. Every revolution of the wheel gives a forward and backward movement to the carriage. The cradle of a sawmill is built upon this principle, and although different variations of machinery may produce the same result, yet the principle of the motion is here very beautiful, because very simply, explained. While the wheel has a circular motion the rack moves horizontally backwards and forwards. the change of the motion of the one is by an arrangement of the other, simply by notching the radius of the wheel instead of the circumference.

Carriage Guide.



The above cut represents a method of keeping the carriage of any machinery parallel, and is effected by passing bands over the loose pulleys seen at either extremity of the carriage, so that the band which goes from the low corner of the figure, is the same as that seen at the top, and the reverse; thus as the carriage is moved backward or forward on the wheels which support it, it is prevented by this arrangement from ever going faster at one end than the other.

The Gold Room in Windsor Castle.

The whole collection in what is called the Gold Room at Windsor Castle is valued at *twelve millions of dollars!* There are glass cases like a silversmith's shop, and behind the glass are the principal articles. There is a dinner service of silver gilt of the most gorgeous kind, presented by the merchants of Liverpool, to the late William the Fourth, long before he was king, in reward for his advocacy of the slave trade! with the inscription telling the tale, There is a salver of immense size, made from the gold snuff boxes alone, o George the Fourth,—the lids and inscriptions curious preserved on the surface in a kind of mosaic of gold; its value is fifty thousand dollars. Nell Gwynn's bellows—the handles, nozzles, &c. of gold!—the golden peacock inlaid with diamonds, and rubies from Delhi—not as large as a pheasant, but valued at one hundred and fifty thousand dollars; the footstool of Tippoo Saib, a solid gold lion with chrystal eyes, the value of its gold alone seventy thousand dollars; George the Fourth's celebrated golden candelabra for a dinner table, valued at fifty thousand dollars, so heavy that two men are required to lift each. Piles upon piles of golden plates, sufficient to dine two hundred and fifty persons, with ample changes. There are 140 dozen each of gold knives and forks of various patterns, and 141 dozen each of gold table and tea spoons, all arranged in the most perfect order, and glass cases on tables in the middle of the room filled with gorgeous gold. From the contemplation of all this memory only carries away a confused idea of riches, such as must have cost poor underground laborers, lives of toil, and sweat, and pain, to procure. A simple fact in connection with this gorgeous display will serve to illustrate its worth to one at least of its royal possessors, George the Fourth, whose sense of taste became so vitiated that although his meat was set before him in golden dishes he was obliged to season it with assafœtida to make it anything but tasteless.

The Telegraph among the Turks.

A letter from Constantinople states that Dr. Smith, of South Carolina, chemist and geologist to the Sultan, has procured a complete set of the magnetic telegraph apparatus used by Professor Morse, and presented it to his Majesty. The system of Prof. M. was fully explained to the Sultan by Dr. S. and Hamlin, an American missionary, who has charge of a seminary for young men on the banks of the Bosphorus. The Sultan was delighted, and is said to have decreed to Prof. Morse a diploma in the Turkish language, and a diamond decoration.

Mercury for thermometers is purified by agitation in a bottle with sand, and then by straining it through leather.

To Boil Shad.

All the small bones in a shad may be made perfectly soft so as to be masticated without any difficulty by boiling it smartly for 7 or 8 hours. The fish of course should be wrapt up tightly in a cotton cloth so as to prevent its falling to pieces. The palatableness of the fish is said to be in no degree lessened by this mode of treatment. One who has witnessed this with more senses than one vouches for the accuracy of the above.

Watches.

Watches, remarkable for their extreme thinness, are now manufactured at Geneva. They are not thicker than a line and the sixteenth part of a line—little more than the 12th of an inch. This change does not, however, militate against the full play of the movement for that remains the same, the thinness being obtained by placing the hands at the side instead of over the works. This arrangement makes the watches rather larger in circumference.

Making Gold.

It is a singular fact that Sir Humphrey Davy the great chemist, declared the search for the philosopher's stone not so visionary as generally supposed. He considered it possible that the secret of making gold should yet be discovered, though he doubted whether it could be turned to a lucrative purpose.

Steamboat Signals.

The Admiralty in England having notified that they intended to adopt a green light instead of the usual self-colored light, for steamers, some of the steam packet companies objected to the change, and being furnished with the green light, tested it with the the red and natural colored lights, and the trial resulted in the utter condemnation of the Admiralty green light. The three lights were placed in a line on the coast some miles distant, the green appearing far more distant as well as far less distinct than the rest.

The human body in a healthy state is generally at 98° Fahrenheit.

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